

claim(s) by the current amendment. The attached page(s) is captioned "**Version With Markings To Show Changes Made.**"

Claim 11 was rejected under 35 U.S.C. Section 112. While applicant does not agree with this rejection, claim 11 has been canceled in order to expedite prosecution and render the issue moot.

Claim 1 stands rejected under 35 U.S.C. Section 102(e) as being allegedly anticipated by Zhao (US 6,100,184). This Section 102(e) rejection is respectfully traversed for at least the following reasons.

Claim 1 requires that "the nitride etching stop film and the first and second oxide etching stop films are all provided as *continuous layers with no apertures defined therein* when the resist pattern is formed over the multi-layered film, and forming an opening by an etching process using the resist pattern as a mask during at least a part of forming the opening, wherein the opening penetrates at least the first and second organic insulating films and is of *substantially the same size in both the first and second organic insulating films.*" For example, and without limitation, Fig. 1(a) of the instant application illustrates that the nitride etching stop film (2) and the first and second oxide etching stop films (4 and 6) are all provided as *continuous layers with no apertures defined therein* when the resist pattern (7) is formed over the multi-layered film. Also, Figs. 1(e)-(g) illustrate forming an opening (8) by an etching process using the resist pattern as a mask during at least a part of forming the opening, wherein the opening (8) penetrates at least the first and second organic insulating films (3 and 5) and is of *substantially the same size in both*

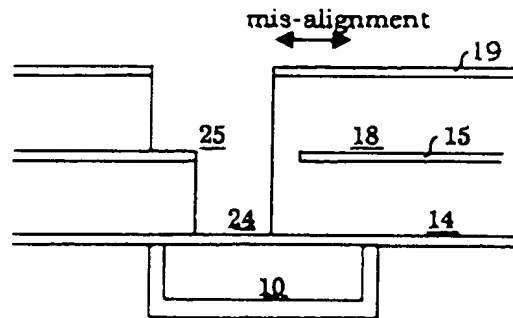
*the first and second organic insulating films (3 and 5). Zhao fails to disclose or suggest the aforesaid quoted aspects of claim 1.*

Zhao in Figures 7-9 discloses a nitride etch stop layer 13, first and second oxide etch stop layers 15 and 19, and organic dielectric layers 14 and 18. In Zhao, photoresist 22 is provided over second etch stop layer 19. However, Zhao significantly differs from the invention of claim 1 in two (2) significant respects. *First*, Zhao requires that an aperture or hole be formed in etch stop layer 15 before the photoresist 22 is formed on the multi-layered film. For example, an aperture in etch stop layer 15 is formed in Figure 5 of Zhao, well before the photoresist 22 is formed on the multi-layered film. *Second*, in Zhao a single photoresist 22 is utilized to form the openings 24, 25 of *different sizes* in dielectric films 14, 18.

Thus, Zhao fails to disclose or suggest each of the following two requirements of claim 1: (a) "the nitride etching stop film and the first and second oxide etching stop films are all provided as *continuous layers with no apertures defined therein* when the resist pattern is formed over the multi-layered film," and (b) "the opening penetrates at least the first and second organic insulating films and is of *substantially the same size in both the first and second organic insulating films.*" Zhao does not disclose either of these two aspects of claim 1, and is entirely unrelated to the invention of claim 1 in these respects. Moreover, one of ordinary skill in the art would never have modified Zhao to meet claim 1, because if Zhao were modified to remove the opening/aperture in etch stop layer 15 in Zhao the purposes of functionality of Zhao would be destroyed.

Zhao's structure/technique (which fails to meet the aforesaid aspects (a) and (b) of claim 1) is problematic in several respects. In particular, Zhao requires formation of aperture or window 17 in etch stop 15 (see Fig. 5) before layers 18-19 are applied. Zhao does this so that different sized holes 24 and 25 can be filed simultaneously. Unfortunately, Zhao is problematic in this regard because if resist layer 22 is mis-aligned, then the width of the hole 24 becomes considerably smaller than the width of window 17 in the etch stop 15 as shown below:

#### MISALIGNMENT PROBLEM WITH ZHAO



Such misalignment reduces the contact area of diffusion layer 10 in Zhao with a wiring material embedded in the via hole 24. As a result, wiring resistance increases which is very problematic. Accordingly, not only does Zhao fail to disclose or suggest the aforesaid aspects (a) and (b) of claim 1, but Zhao's structure is deficient and problematic for the reasons discussed above. In contrast, the invention of claim 1 enables, for example, the misalignment problem of Zhao to be solved.

Zhao has another problem in that when etching is carried out to the entire height of an interlayer 14 using only etch stop 15 as an etch stop, the etch stop tends to become etched itself (see Fig. 9). Moreover, Zhao requires photolithography to be carried out

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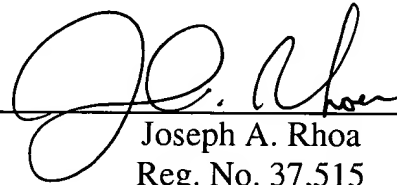
twice – once using resist 16 in Fig. 4 and again using resist 22 in Fig. 7. This excess photolithography required by Zhao may be problematic in certain instances. In certain example embodiments of this invention, the invention of claim 1 can reduce and/or eliminate one or more of the aforesaid problems associated with Zhao.

For at least the foregoing reasons, it is respectfully requested that all rejections be withdrawn. All claims are in condition for allowance. If any minor matter remains to be resolved, the Examiner is invited to telephone the undersigned with regard to the same.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please cancel claims 10-11.

1. (Amended) A method for producing a semiconductor device comprising:

forming [an opening by etching process using] a resist pattern to be used as a mask [in] over a multi-layered film, wherein the multi-layered film includes [including] a nitride etching stop film, a first organic insulating film, a first oxide etching stop film, [and] a second organic insulating film, and [being layered in this order such that the opening penetrates from the second organic insulating film to the first organic insulating film, wherein] a second oxide etching stop film layered in this order so that the second oxide etching stop film is formed between the resist pattern and the second organic insulating film to protect the second organic insulating film[ from being etched during the formation of the opening.],

wherein the nitride etching stop film and the first and second oxide etching stop films are all provided as continuous layers with no apertures defined therein when the resist pattern is formed over the multi-layered film, and

forming an opening by an etching process using the resist pattern as a mask during at least a part of forming the opening, wherein the opening penetrates at least the first and second organic insulating films and is of substantially the same size in both the first and second organic insulating films.

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Please add the following new claim:

12. (New) The method of claim 1, wherein another resist is used as a mask in enlarging the opening in the second organic insulating film but not the first organic insulating film.